

REMARKS

This amendment is in response to a final Office action (Paper No. 17) dated 24 July 2003.

Claims 1-20, 23, 24 and 27-32 are pending.

In Paper No. 17, the Examiner has finally rejected claims 1, 2, 4-16 and 18-22 under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 5,841,452 to Silverbrook in view of Koto, U.S. Patent No. 4,368,478. The Examiner also rejected claims 1-3, 5, 7, 12, 13, 15, 17, 18 and 20-28 under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,102,530 to Kim *et al.* in view of Browning *et al.*, U.S. Patent No. 6,132,033 and Koto '478. The Examiner also rejected claims 4, 6, 8, 9, 11 and 14 under 35 U.S.C. 103 (a) as being unpatentable over Kim '530 in view of Browning '033 and Koto '478 and further in view of Silverbrook '452. Applicant traverses these rejections.

In each of these grounds of rejections, the Examiner uses various combinations of Silverbrook '452, Browning '033 and Kim '530 for teaching of the semiconductor structure of an ink jet print head having a ink reservoir, a manifold, a chamber, a nozzle plate and a heater. In each of these grounds of rejections, the Examiner relies solely on Koto '478 for a teaching of grooves on the inner surface of an ink passage.

Applicant first submits that none of Silverbrook '452, Browning '033 and Kim '530 ever mention anything about a problem with unwanted bubbles in the ink. The only reference to ever

discuss unwanted bubbles in the ink is Koto '478. Because Silverbrook '452, Browning '033 and Kim '530 do not discuss unwanted bubbles in the ink, and these references also do not disclose features, such as an air trap, in the ink jet printhead for removal of these unwanted bubbles, Applicant submits that one having ordinary skill in the art would not turn to Koto '478 to fill in for the deficiencies of either one or combination of Silverbrook '452, Browning '033 and Kim '530. Because there is a lack of motivation to combine, the rejection cannot stand.

The fact that neither Silverbrook '452, Browning '033 or Kim '530 deal with unwanted air bubbles in the ink should not be surprising since ink jet printhead of Koto '478 is different from the ink jet printheads of Silverbrook '452, Browning '033 and Kim '530 in that Koto '478 can operate in any orientation.

In paragraph 6 of Paper No. 17, the Examiner states, "Applicant's argument that Koto does not teach providing the serrations to reduce flow resistance and improve fluid flow, is not persuasive. In Koto, the serrations are provided to allow ink to flow around an obstruction in the flow path, such as an air bubble. Since the serrations allow the ink to flow, they reduce flow resistance and improve fluid flow to the head." Applicant disagrees.

Unlike Koto '478, Applicant's invention has grooves in the ink inlet passage to reduce flow resistance and improve fluid flow from when no bubble is present. In Koto '478, teeth 90 do not improve capillary action and ink flow, the teeth 90 simply permits the required capillary

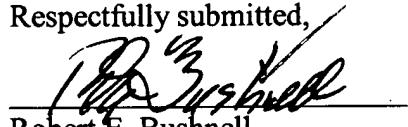
action to continue. There is no teaching in Koto '478 that teeth 90 improve the ink flow through the air trap over a situation where no bubble is present. Therefore, the purpose of Koto '478 is unrelated to the purpose of Applicant's invention.

Applicant has reviewed Koto '478, Kim '530, Browning '033 and Silverbrook '452. Applicant cannot find any teaching, in any one or any combination of these four references, of either (1) that grooves in an ink inlet passage increase printing speed, (2) that grooves in the ink inlet passage decrease the time needed to refill an ink chamber after ejection of a droplet and/or (3) that grooves in an ink inlet passage increase print speed and decrease ink chamber refill time because grooves increase the surface area of the ink inlet passage. Therefore, Applicant submits that Applicant's claimed invention is not taught or fairly suggested by the applied prior art.

No fees are incurred by the filing of this amendment.

In view of the above, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. Reconsideration of the rejections and objections is requested. Should any questions remain unresolved, the Examiner is requested to telephone Applicant's attorney.

Respectfully submitted,

  
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